

CDC's Safe Water Programs

CDC 24/7: Saving Lives. Protecting People from Health Threats. Saving Money through Prevention.

Environmental Health

Your environment is everything around you—the air you breathe, the water you drink, the community you live in, the places where your food is grown or prepared, your workplace, and your home. When your environment is safe and healthy, you are more likely to stay healthy. But when your environment exposes you to hazardous substances or dangerous events, your health can be negatively affected.

CDC is committed to saving lives and protecting people from environmental hazards by responding to natural and man-made disasters, supporting state and city public health programs, educating communities, and providing scientific knowledge. We help maintain and improve the health of Americans by promoting a healthy environment and preventing premature death and avoidable illness caused by environmental and related factors. We also identify how people might be exposed to hazardous substances in the environment and assess exposures to determine if they are hazardous to human health. CDC invests in prevention to improve health and save money by reducing health care costs. We remain committed to maximizing the impact of every dollar entrusted to the agency.

Safe Water Programs



CDC's Safe Water Programs reduce waterborne exposures and diseases, with an emphasis on noninfectious contaminants. CDC is the only federal agency that safeguards drinking water not regulated under the Environmental Protection Agency (EPA)'s Safe Drinking Water Act. About 15% of the U.S. population (nearly 50 million people) obtains drinking water from private wells. Others

drink water from local springs, livestock water tanks, or rainwater captured in cisterns. Little is known about the quality of water and the potential health effects from these unregulated sources.

The programs have built unique expertise in

- unregulated drinking water systems;
- environmental factors contributing to waterborne illness and disease outbreaks;
- drinking water issues facing vulnerable populations, such as American Indians and Alaska Natives; and
- waterborne toxic exposures, such as heavy metals.

CDC's Safe Water Programs make drinking and recreational water sources safer by conducting water-related research with local, state, and tribal partners. CDC and its partners:

- Investigate exposure from water-related contamination from metals, pesticides, nitrates, and other toxic chemicals.
- Investigate outbreaks and conduct studies to understand the health impact of drinking water exposures, especially in vulnerable populations.

- Assess the utility and effectiveness of interventions to promote safe drinking water.
- Identify how to protect health when water sources are not safe because of natural disasters and other environmental emergencies.
- Conduct practice-based research on the impact of wastewater on private drinking water sources.
- Assess use of water safety plans—used extensively overseas—to identify and address leading water quality threats among at-risk communities such as American Indians and Alaskan Natives.
- Develop recommendations and programs to protect the public from consuming polluted water.
- Improve the understanding of health implications of toxicants in all types of drinking water and recreational waters.

For each of these activities, the Safe Water Programs provide technical assistance to state, local, tribal, and federal public health agencies.

Program Funding: Safe Water Programs	
Year	Funding Level
FY 2010	\$7,282,000
FY 2011	\$7,150,000
FY 2012	\$7,109,000

Public Health in Action:

Navajo Nation Drinking Water

About 25% of Navajo Nation households are not connected to a public water system. Instead, they must haul water from outdoor, often untreated sources. The exposures and health risks associated with this practice are unknown.

To begin addressing this knowledge gap, CDC tested 199 untreated water sources and found bacteria, arsenic, and uranium in the water. CDC wanted to compare what was found in the water to what was in people's bodies, using surveys and urine analysis. CDC found that although uranium levels were higher in the Navajo Nation population, they were comparable to other people in the Southwest United States.

CDC and its Navajo Nation partners visited 300 households to explain the study results, presented results at Navajo chapter meetings and to community groups, and prepared physician education for Navajo Nation clinics. In addition, Navajo Nation EPA, the U.S. EPA, and others are using CDC's studies to reduce waterborne exposures to harmful toxicants among the Navajo.

Private Well Water Quality in West Virginia

CDC and the West Virginia Bureau of Public Health conducted an assessment of private drinking water systems in 10 West Virginia counties, testing to see if water quality was within parameters for heavy metals, radon-222, and bacterial contamination. Over 70% of the samples had levels of radon-222 above EPA recommended levels, and total coliform bacteria or *E. coli* species were detected in about 37%. This study provided the state with data to target appropriate public health interventions and increased awareness of unregulated drinking water issues among state public health officials.

Post Flooding Well Water Contamination in Tennessee and Kentucky

Very little information exists to show what aspects of floods are the greatest risk factors for well contamination. CDC collected and tested floodwater and well water after the 2010 Tennessee and 2011 Kentucky floods. In Tennessee, CDC found that flood water was heavily contaminated with total coliforms, *E. coli*, *Enterococcus*, and *Salmonella*. CDC found that flood water in Kentucky was heavily contaminated with total coliforms, *E. coli*, *Enterococcus*, and *Salmonella*, as well as very high levels of iron and manganese. This type of data helps CDC identify ways to protect health when water sources are not safe during natural disasters and other environmental emergencies.

Supporting Environmental Health Services—Addressing Drinking Water Concerns in Migrant Farm Camps in California

Through Environmental Health Specialists Network (EHS-Net), CDC's Safe Water Programs support practice and research on water-related environmental health services in California; Minnesota; New York; Tennessee; and Cerro Gordo County, Iowa.

For example, California increased monitoring to measure bacteria and chemicals in drinking water at 15 migrant farm camps in the Sacramento Delta. CDC educated workers on the dangers of high nitrates and bacteria in well water, held meetings in five communities, and provided a bilingual workshop on proper well disinfection along with a well water disinfection kit. This outreach affected 1,583 workers at the migrant farm camps. Disinfection efforts decreased rates of positive bacteriological samples in Sacramento Delta from 35% during the first year to 20% in the second year; rates continue to decline.

- Groups most vulnerable to the effects of unregulated drinking water sources are American Indian and Alaska Native populations and others living in communities that rely on private wells.
- For some communities, access to plentiful, healthy water is, or may soon be, limited by the presence of
 - environmental pollutants in local water sources,
 - drought and aquifer depletion that limit water availability,
 - flooding events that overwhelm local treatment capacity,
 - local weather changes associated with climate change,
 - new and more stringent regulations, or
 - failures in water-related infrastructure.
- Safe Water Programs protect water from contamination. Their permitting and inspection programs for drinking water and wastewater systems, pools, and other facilities prevent outbreaks.
- Safe Water Programs' research priorities are understanding exposures associated with unregulated drinking water sources and their economic and health burdens, and evaluating strategies to promote optimal private well stewardship.

For more information, visit

National Center for Environmental Health
<http://www.cdc.gov/nceh/>

Health Studies Branch – Promoting Clean Water for Health

<http://www.cdc.gov/nceh/hsb/cwh/default.htm>

Environmental Health Specialists Network (EHS-Net)

<http://www.cdc.gov/nceh/ehs/EHSNet/index.htm>